

Sequence Listing

<110> Seoul National University Industry Foundation

<120> Bone Graft And Scaffolding Materials Immobilized With
Osteogenesis Enhancing Peptides On The Surface

<130> PP-B0100

<150> KR10-2004-0019010
<151> 2004-03-19

<160> 69

<170> KopatentIn 1.71

<210> 1
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> RGD containing peptide

<400> 1
Cys Gly Gly Arg Gly Asp Ser
1 5

<210> 2
<211> 11
<212> PRT
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<220>
<223> RGD containing peptide

<400> 2
Val Ala Cys Asp Cys Arg Gly Asp Cys Phe Cys
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Sequence Listing

<210> 3
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<220>
<223> partial peptide of BMP-2

<400> 3
Ala Lys His Lys Gln Arg Lys Arg Leu Lys Ser Ser Cys Lys Arg His
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Pro

<210> 4
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Cys Ser Pro Lys His His Pro Gln Arg Ser Arg Lys Lys Asn
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<210> 5
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Sequence Listing

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Cys Ser Ser Arg Lys Lys Asn Lys Asn Cys Arg Arg His
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Ser Asp Val Gly Trp Asn Asp Trp Ile Val Ala Pro Pro Gly Tyr His
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Ala

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Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala Ile
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Val Gln Thr Leu Val Asn Ser Val Asn
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Sequence Listing

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Lys Ile Pro Lys Ala Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser
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Met Leu Tyr Leu
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<210> 9
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<220>
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Ser Met Leu Tyr Leu Asp Glu Asn Glu Lys Val Val Leu Lys Asn Tyr
1 5 10 15

Gln Asp

<210> 10
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Sequence Listing

<220>

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<400> 10

Gln Ala Lys His Lys Gln Arg Lys Arg Leu Lys Ser Ser Cys Lys Arg

1 5 10 15

His Pro Leu Tyr

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<400> 11

Lys Ile Pro Lys Ala Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser

1 5 10 15

Met Leu Tyr Leu

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<211> 21

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<220>

<223> partial peptide of BMP-7

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Ser Met Leu Tyr Leu Asp Glu Asn Glu Lys Val Val Leu Lys Asn Tyr

Sequence Listing

1 5 10 15

Gln Asp Met Val Val

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<223> partial peptide of BMP-4

<400> 13

Ser Ser Ile Pro Lys Ala Cys Cys Val Pro Thr Glu Leu Ser Ala Ile

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Ser Met Leu Tyr Leu

20

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<220>

<223> partial peptide of bone sialoprotein

<400> 14

Pro Lys His His Ser Gln Arg Ala Arg Lys Lys Asn Lys Asn Cys Arg

1 5 10 15

Arg His Ser Leu Tyr

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Sequence Listing

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1 5 10 15

Ser Met Leu Tyr Leu
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Gln Glu Met Val Val
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Sequence Listing

<223> partial peptide of BMP-6

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Val Leu Tyr Phe

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<210> 18

<211> 22

<212> PRT

<213> Artificial Sequence

<220>

<223> partial peptide of BMP-6

<400> 18

Val Ser Ser Ala Ser Asp Tyr Asn Ser Ser Glu Leu Lys Thr Ala Cys
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Arg Lys His Glu Leu Tyr

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<400> 19

Tyr Val Pro Lys Pro Cys Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser
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Sequence Listing

Val Leu Tyr Phe

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<212> PRT

<213> Artificial Sequence

<220>

<223> partial peptide of BMP-6

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Arg Asn Met Val Val Arg Ala Cys

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<211> 20

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<223> Partial sequence of BMP-7

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Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile Ser

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Val Leu Tyr Phe

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<210> 22

Sequence Listing

<211> 21
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<400> 22
Glu Asn Ser Ser Ser Asp Gln Arg Gln Ala Cys Lys Lys His Glu Leu
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Tyr Val Ser Phe Arg
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<210> 23
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Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile Ser
1 5 10 15
Val Leu Tyr Phe
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<210> 24
<211> 19
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Sequence Listing

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1 5 10 15

Arg Asn Met

<210> 25
<211> 8
<212> PRT
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<220>
<223> partial peptide of bone sialoprotein

<400> 25
Glu Glu Glu Gly Glu Glu Glu
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<210> 26
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<213> Artificial Sequence

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<223> partial peptide of bone sialoprotein

<400> 26
Glu Glu Glu Glu Glu Glu Glu Glu
1 5 10

<210> 27
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Sequence Listing

<212> PRT

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<223> partial peptide of bone sialoprotein

<400> 27

Tyr Glu Thr Tyr Asp Glu Asn Asn Gly Glu Pro Arg Gly Asp Thr Tyr

1 5 10 15

Arg Ile

<210> 28

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> partial peptide of bone sialoprotein

<400> 28

Glu Glu Gly Glu Glu Glu

1 5

<210> 29

<211> 8

<212> PRT

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<220>

<223> partial peptide of bone sialoprotein

<400> 29

Glu Glu Glu Glu Glu Glu Glu

Sequence Listing

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<210> 30
<211> 17
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<220>
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<400> 30
Tyr Glu Ile Tyr Glu Ser Glu Asn Gly Glu Pro Arg Gly Asp Asn Tyr
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Arg

<210> 31
<211> 9
<212> PRT
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<400> 31
Lys Asn Leu His Arg Arg Val Lys Ile
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<210> 32
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Sequence Listing

<223> partial peptide of bone sialoprotein

<400> 32

Asp Ser Ser Glu Glu Asn Gly Asp Asp Ser Ser Glu Glu Glu Glu
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Glu Glu Glu Thr Ser Asn Glu Gly Glu Asn

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<210> 33

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<223> partial peptide of bone sialoprotein

<400> 33

Asp Glu Glu Glu Glu Glu Glu Gly Asn Glu Asn Glu Glu Ser
1 5 10 15

Glu Ala Glu Val Asp

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<211> 11

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<400> 34

Ser Glu Asn Gly Glu Pro Arg Gly Asp Asn Tyr

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Sequence Listing

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<220>

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<400> 35

Thr Gly Arg Arg Gly Asp Leu Ala Thr

1 5

<210> 36

<211> 21

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<223> partial peptide of TGF

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Arg Ala Leu Asp Thr Asn Tyr Cys Phe Ser Ser Thr Glu Lys Asn Cys

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Cys Val Arg Gln Leu

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<210> 37

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<212> PRT

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<223> partial peptide of TGF

Sequence Listing

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Leu Tyr Asn Gln His Asn Pro Gly Ala Ser Ala Ala Pro Cys Cys Val

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Pro Gln Ala

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<220>

<223> partial peptide of PDGF

<400> 38

Cys Glu Thr Val Ala Ala Ala Arg Pro Val Thr Arg Ser Pro Gly Gly

1 5 10 15

Ser Gln Glu Gln Arg

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<210> 39

<211> 20

<212> PRT

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<220>

<223> partial peptide of PDGF

<400> 39

Ala Lys Thr Pro Gln Thr Arg Val Thr Ile Arg Thr Val Arg Val Arg

1 5 10 15

Sequence Listing

Arg Pro Pro Lys

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<210> 40

<211> 9

<212> PRT

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<223> partial peptide of AFGF

<400> 40

Tyr Lys Lys Pro Lys Leu Leu Tyr Cys

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<210> 41

<211> 8

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Ile Ser Lys Lys His Ala Glu Lys

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<210> 42

<211> 12

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<223> partial peptide of BFGF

Sequence Listing

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Gly His Phe Lys Asp Pro Lys Arg Leu Tyr Cys Lys
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<400> 43
Pro Asp Gly Arg Val Asp
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<400> 44
Lys Glu Asp Gly Arg Leu Leu
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Sequence Listing

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Tyr Arg Ser Arg Lys Tyr

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<210> 46

<211> 21

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<220>

<223> partial peptide of dentin sialoprotein

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Glu Asp Glu Gly Ser Gly Asp Asp Glu Asp Glu Glu Ala Gly Asn Gly

1 5 10 15

Lys Asp Ser Ser Asn

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<210> 47

<211> 20

<212> PRT

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<223> partial peptide of dentin sialoprotein

<400> 47

Asp Asp Ala Asn Ser Glu Ser Asp Asn Asn Ser Ser Ser Arg Gly Asp

1 5 10 15

Ala Ser Tyr Asn

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Sequence Listing

<210> 48
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<212> PRT
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<223> partial peptide of dentin sialoprotein

<400> 48
Asp Ser Asp Ser Ser Asp Ser Ser Asn Ser Ser Asp Ser Ser Asp Ser
1 5 10 15

Ser Asp Ser Asp Ser Ser Asp
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<210> 49
<211> 22
<212> PRT
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<220>
<223> partial peptide of Heparin binding EGF like GF

<400> 49
Asp Leu Gln Glu Ala Asp Leu Ala Leu Leu Arg Val Thr Leu Ser Ser
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Lys Pro Gln Ala Leu Ala
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<210> 50
<211> 20
<212> PRT
<213> Artificial Sequence

Sequence Listing

<220>

<223> partial peptide of Heparin binding EGF like GF

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Ala Thr Pro Asn Lys Glu Glu His Gly Lys Arg Lys Lys Gly Lys

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Gly Leu Gly Lys

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<212> PRT

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<223> partial peptide of Heparin binding EGF like GF

<400> 51

Lys Arg Asp Pro Cys Leu Arg Lys Tyr Lys Asp Phe Cys

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<211> 20

<212> PRT

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<400> 52

Cys Lys Tyr Val Lys Glu Leu Arg Ala Pro Ser Cys Ile Cys His Pro

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Sequence Listing

Gly Tyr His Gly

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<210> 53

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<212> PRT

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<223> partial peptide of cadherin EGF LAG seven-pass G-type receptor3

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Pro Gln Tyr Asn Tyr Gln Thr Leu Val Pro Glu Asn Glu Ala Ala Gly

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Thr Ala Val Leu Arg Val Val Ala Gln

20 25

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<212> PRT

<213> Artificial Sequence

<220>

<223> partial peptide of cadherin EGF LAG seven-pass G-type receptor3

<400> 54

Asp Pro Asp Ala Gly Glu Ala Gly Arg Leu Val Tyr Ser Leu Ala Ala

1 5 10 15

Leu Met Asn Ser Arg

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<210> 55

<211> 29

Sequence Listing

<212> PRT

<213> Artificial Sequence

<220>

<223> partial peptide of cadherin EGF LAG seven-pass G-type receptor3

<400> 55

Ser Leu Glu Leu Phe Ser Ile Asp Pro Gln Ser Gly Leu Ile Arg Thr

1 5 10 15

Ala Ala Ala Leu Asp Arg Glu Ser Met Glu Arg His Tyr

20 25

<210> 56

<211> 23

<212> PRT

<213> Artificial Sequence

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<223> partial peptide of cadherin EGF LAG seven-pass G-type receptor3

<400> 56

Leu Arg Val Thr Ala Gln Asp His Gly Ser Pro Arg Leu Ser Ala Thr

1 5 10 15

Thr Met Val Ala Val Thr Val

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<210> 57

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<212> PRT

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<223> partial peptide of cadherin EGF LAG seven-pass G-type receptor3

Sequence Listing

<400> 57

Glu Gln Ala Gln Tyr Arg Glu Thr Leu Arg Glu Asn Val Glu Glu Gly

1 5 10 15

Tyr Pro Ile Leu Gln Leu Arg Ala Thr Asp Gly Asp Ala Pro Pro Asn

20 25 30

Ala Asn Leu Arg Tyr Arg Phe Val Gly Pro Pro Ala Ala Arg Ala Ala

35 40 45

Ala Ala Ala Ala Phe Glu Ile Asp Pro Arg Ser Gly Leu Ile Ser Thr

50 55 60

Ser Gly Arg Val Asp Arg Glu His Met Glu Ser Tyr Glu Leu Val Val

65 70 75 80

Glu Ala Ser Asp Gln Gly Gln Glu Pro Gly Pro Arg Ser Ala Thr Val

85 90 95

Arg Val His Ile Thr Val Leu Asp Glu Asn Asp Asn Ala Pro Gln Phe

100 105 110

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<211> 106

<212> PRT

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Ser Glu Lys Arg Tyr Val Ala Gln Val Arg Glu Asp Val Arg Pro His

1 5 10 15

Thr Val Val Leu Arg Val Thr Ala Thr Asp Arg Asp Lys Asp Ala Asn

Sequence Listing

20 25 30

Gly Leu Val His Tyr Asn Ile Ile Ser Gly Asn Ser Arg Gly His Phe
35 40 45

Ala Ile Asp Ser Leu Thr Gly Glu Ile Gln Val Val Ala Pro Leu Asp
50 55 60

Phe Glu Ala Glu Arg Glu Tyr Ala Leu Arg Ile Arg Ala Gln Asp Ala
65 70 75 80

Gly Arg Pro Pro Leu Ser Asn Asn Thr Gly Leu Ala Ser Ile Gln Val
85 90 95

Val Asp Ile Asn Asp His Ile Pro Ile Phe
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<210> 59

<211> 59

<212> PRT

<213> Artificial Sequence

<220>

<223> partial peptide of cadherin EGF LAG seven-pass G-type receptor3

<400> 59

Asp Asp Asn Val Cys Leu Arg Glu Pro Cys Glu Asn Tyr Met Lys Cys
1 5 10 15

Val Ser Val Leu Arg Phe Asp Ser Ser Ala Pro Phe Leu Ala Ser Ala
20 25 30

Ser Thr Leu Phe Arg Pro Ile Gln Pro Ile Ala Gly Leu Arg Cys Arg
35 40 45

Cys Pro Pro Gly Phe Thr Gly Asp Phe Cys Glu
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Sequence Listing

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<220>
<223> partial peptide of cadherin EGF LAG seven-pass G-type receptor3

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Glu Leu Asp Leu Cys Tyr Ser Asn Pro Cys Arg Asn Gly Gly Ala Cys
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Ala Arg Arg Glu Gly Gly Tyr Thr Cys Val Cys Arg Pro Arg Phe Thr
20 25 30

Gly Glu Asp Cys Glu
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<213> Artificial Sequence

<220>
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<400> 61
Glu Ala Gly Arg Cys Val Pro Gly Val Cys Arg Asn Gly Thr Cys
1 5 10 15

Thr Asp Ala Pro Asn Gly Gly Phe Arg Cys Gln Cys Pro Ala Gly Gly
20 25 30

Ala Phe Glu Gly Pro Arg Cys Glu
35 40

Sequence Listing

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<212> PRT

<213> Artificial Sequence

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<223> , partial peptide of cadherin EGF LAG seven-pass G-type receptor3

<400> 62

Val Ala Ala Arg Ser Phe Pro Pro Ser Ser Phe Val Met Phe Arg Gly
1 5 10 15

Leu Arg Gln Arg Phe His Leu Thr Leu Ser Leu Ser Phe Ala Thr Val
20 25 30

Gln Gln Ser Gly Leu Leu Phe Tyr Asn Gly Arg Leu Asn Glu Lys His
35 40 45

Asp Phe Leu Ala Leu Glu Leu Val Ala Gly Gln Val Arg Leu Thr Tyr
50 55 60

Ser Thr Gly Glu Ser Asn Thr Val Val Ser Pro Thr Val Pro Gly Gly
65 70 75 80

Leu Ser Asp Gly Gln Trp His Thr Val His Leu Arg Tyr Tyr Asn Lys
85 90 95

Pro Arg Thr Asp Ala Leu Gly Gly Ala Gln Gly Pro Ser Lys Asp Lys
100 105 110

Val Ala Val Leu Ser Val Asp Asp Cys Asp Val Ala Val Ala Leu Gln
115 120 125

Phe Gly Ala Glu Ile Gly Asn Tyr Ser Cys Ala Ala Gly Val Gln
130 135 140

Thr Ser Ser Lys Lys Ser Leu Asp Leu Thr Gly Pro Leu Leu Leu Gly
145 150 155 160

Sequence Listing

Gly Val Pro Asn Leu Pro Glu Asn Phe Pro Val Ser His Lys Asp Phe
165 170 175

Ile Gly Cys Met Arg Asp Leu His Ile Asp Gly Arg Arg Val Asp Met
180 185 190

Ala Ala Phe Val Ala Asn Asn Gly Thr Met Ala Gly Cys
195 200 205

<210> 63

<211> 181

<212> PRT

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<220>

<223> partial peptide of cadherin EGF LAG seven-pass G-type receptor3

<400> 63

Pro His His Phe Arg Gly Asn Gly Thr Leu Ser Trp Asn Phe Gly Ser
1 5 10 15

Asp Met Ala Val Ser Val Pro Trp Tyr Leu Gly Leu Ala Phe Arg Thr
20 25 30

Arg Ala Thr Gln Gly Val Leu Met Gln Val Gln Ala Gly Pro His Ser
35 40 45

Thr Leu Leu Cys Gln Leu Asp Arg Gly Leu Leu Ser Val Thr Val Thr
50 55 60

Arg Gly Ser Gly Arg Ala Ser His Leu Leu Leu Asp Gln Val Thr Val
65 70 75 80

Ser Asp Gly Arg Trp His Asp Leu Arg Leu Glu Leu Gln Glu Glu Pro
85 90 95

Gly Gly Arg Arg Gly His His Val Leu Met Val Ser Leu Asp Phe Ser

Sequence Listing

100 105 110

Leu Phe Gln Asp Thr Met Ala Val Gly Ser Glu Leu Gln Gly Leu Lys

115 120 125

Val Lys Gln Leu His Val Gly Gly Leu Pro Pro Gly Ser Ala Glu Glu

130 135 140

Ala Pro Gln Gly Leu Val Gly Cys Ile Gln Gly Val Trp Leu Gly Ser

145 150 155 160

Thr Pro Ser Gly Ser Pro Ala Leu Leu Pro Pro Ser His Arg Val Asn

165 170 175

Ala Glu Pro Gly Cys

180

<210> 64

<211> 36

<212> PRT

<213> Artificial Sequence

<220>

<223> partial peptide of cadherin EGF LAG seven-pass G-type receptor3

<400> 64

Cys Pro Cys Arg Pro Gly Ala Leu Gly Arg Gln Cys Asn Ser Cys Asp

1 5 10 15

Ser Pro Phe Ala Glu Val Thr Ala Ser Gly Cys Arg Val Leu Tyr Asp

20 25 30

Ala Cys Pro Lys

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<210> 65

<211> 106

Sequence Listing

<212> PRT

<213> Artificial Sequence

<220>

<223> partial peptide of OB-cadherin

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Gly Trp Val Trp Asn Gln Phe Phe Val Ile Glu Glu Tyr Thr Gly Pro
1 5 10 15

Asp Pro Val Leu Val Gly Arg Leu His Ser Asp Ile Asp Ser Gly Asp
20 25 30

Gly Asn Ile Lys Tyr Ile Leu Ser Gly Glu Gly Ala Gly Thr Ile Phe
35 40 45

Val Ile Asp Asp Lys Ser Gly Asn Ile His Ala Thr Lys Thr Leu Asp
50 55 60

Arg Glu Glu Arg Ala Gln Tyr Thr Leu Met Ala Gln Ala Val Asp Arg
65 70 75 80

Asp Thr Asn Arg Pro Leu Glu Pro Pro Ser Glu Phe Ile Val Lys Val
85 90 95

Gln Asp Ile Asn Asp Asn Pro Pro Glu Phe
100 105

<210> 66

<211> 109

<212> PRT

<213> Artificial Sequence

<220>

<223> partial peptide of OB-cadherin

<400> 66

Sequence Listing

Leu His Glu Thr Tyr His Ala Asn Val Pro Glu Arg Ser Asn Val Gly
1 5 10 15

Thr Ser Val Ile Gln Val Thr Ala Ser Asp Ala Asp Asp Pro Thr Tyr
20 25 30

Gly Asn Ser Ala Lys Leu Val Tyr Ser Ile Leu Glu Gly Gln Pro Tyr
35 40 45

Phe Ser Val Glu Ala Gln Thr Gly Ile Ile Arg Thr Ala Leu Pro Asn
50 55 60

Met Asp Arg Glu Ala Lys Glu Glu Tyr His Val Val Ile Gln Ala Lys
65 70 75 80

Asp Met Gly Gly His Met Gly Gly Leu Ser Gly Thr Thr Lys Val Thr
85 90 95

Ile Thr Leu Thr Asp Val Asn Asp Asn Pro Pro Lys Phe
100 105

<210> 67

<211> 115

<212> PRT

<213> Artificial Sequence

<220>

<223> partial peptide of OB-cadherin

<400> 67

Pro Gln Arg Leu Tyr Gln Met Ser Val Ser Glu Ala Ala Val Pro Gly
1 5 10 15

Glu Glu Val Gly Arg Val Lys Ala Lys Asp Pro Asp Ile Gly Glu Asn
20 25 30

Gly Leu Val Thr Tyr Asn Ile Val Asp Gly Asp Gly Met Glu Ser Phe
35 40 45

Sequence Listing

Glu Ile Thr Thr Asp Tyr Glu Thr Gln Glu Gly Val Ile Lys Leu Lys
50 55 60

Lys Pro Val Asp Phe Glu Thr Glu Arg Ala Tyr Ser Leu Lys Val Glu
65 70 75 80

Ala Ala Asn Val His Ile Asp Pro Lys Phe Ile Ser Asn Gly Pro Phe
85 90 95

Lys Asp Thr Val Thr Val Lys Ile Ser Val Glu Asp Ala Asp Glu Pro
100 105 110

Pro Met Phe
115

<210> 68

<211> 106

<212> PRT

<213> Artificial Sequence

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<223> partial peptide of OB-cadherin

<400> 68

Pro Met Phe Leu Ala Pro Ser Tyr Ile His Glu Val Gln Glu Asn Ala
1 5 10 15

Ala Ala Gly Thr Val Val Gly Arg Val His Ala Lys Asp Pro Asp Ala
20 25 30

Ala Asn Ser Pro Ile Arg Tyr Ser Ile Asp Arg His Thr Asp Leu Asp
35 40 45

Arg Phe Phe Thr Ile Asn Pro Glu Asp Gly Phe Ile Lys Thr Thr Lys
50 55 60

Pro Leu Asp Arg Glu Glu Thr Ala Trp Leu Asn Ile Thr Val Phe Ala

Sequence Listing

65 70 75 80

Ala Glu Ile His Asn Arg His Gln Glu Ala Gln Val Pro Val Ala Ile

85 90 95

Arg Val Leu Asp Val Asn Asp Asn Ala Pro

100 105

<210> 69

<211> 126

<212> PRT

<213> Artificial Sequence

<220>

<223> partial peptide of OB-cadherin

<400> 69

Lys Phe Ala Ala Pro Tyr Glu Gly Phe Ile Cys Glu Ser Asp Gln Thr

1 5 10 15

Lys Pro Leu Ser Asn Gln Pro Ile Val Thr Ile Ser Ala Asp Asp Lys

20 25 30

Asp Asp Thr Ala Asn Gly Pro Arg Phe Ile Phe Ser Leu Pro Pro Glu

35 40 45

Ile Ile His Asn Pro Asn Phe Thr Val Arg Asp Asn Arg Asp Asn Thr

50 55 60

Ala Gly Val Tyr Ala Arg Arg Gly Phe Ser Arg Gln Lys Gln Asp

65 70 75 80

Leu Tyr Leu Leu Pro Ile Val Ile Ser Asp Gly Gly Ile Pro Pro Met

85 90 95

Ser Ser Thr Asn Thr Leu Thr Ile Lys Val Cys Gly Cys Asp Val Asn

100 105 110

Sequence Listing

Gly Ala Leu Leu Ser Cys Asn Ala Glu Ala Tyr Ile Leu Asn

115

120

125